# Installation Manual

## for UK and Ireland

## Model 76826

Issued 05/2014

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## General Principles of Installation

The Easiflo® 1 feeder is an atmospheric system designed for pools ranging from **50 to 300 m³** depending on bather load and operating conditions.

It is possible to install the feeder on a pool and also dose a spa or small pool with a conventional dosing pump, drawing solution from the discharge tank, but this possibility again depends on volumes and bather load.

There are different types of installation:

1. *As detailed in this manual,* **above grade** or **below grade** installation which depends on the location of the pool pump. Both installations use the small feeder venturi to inject chlorine post filter/heater.
2. Installation using the venturi and **booster pump** to evacuate the chlorine solution produced by the feeder into the circulation line of the pool, *as shown in Schematic 2BP.*
3. Installation using a venturi which employs the motive power of the **pools' own circulating pump**. *In this instance consultation with technical services is necessary to advise on feasibility.*

**Lonza Technical Services personnel can help with all these matters, tel. 01977 714100 for advice if needed.**

### Selecting a location for the Easiflo® 1

Choose a location in the pump room that will allow easy access and service. Always try to minimize the length of the outlet tubing when locating the Easiflo® 1. The Easiflo® 1 comes with 6 metres of half inch OD polyethylene tubing.

## Equipment Required for Feeder Installation

| | |
|---|---|
| Drill - Cordless Recommended | PVC Primer/Cleaner and PVC Glue |
| Tube Cutters or Utility Knife | Saw to cut PVC Pipe |
| 1/2" BSP Tap and 11/16" Drill Bit | Gas Pliers (Channel Locks) |
| 1/2" (M)BSP x 1/4" (F)BSP Reducing Bushing | Vacuum Gauge (Inches of Hg) |
| PTFE or Pipe Sealant | |

## Equipment Required for Venturi Installation

| | |
|---|---|
| 1" PVC Pipe and Fittings (elbows, tees etc.) | 1 1/2" BSP Tap and 1 3/4" Hole Saw (Optional) |
| Ball or Gate Valve for Pool Return Line | Saddle Clamps (optional) |

## Parts Included with the Easiflo® 1 Feeder (see pages 11-13 for corresponding part numbers)

(25) 1/2" OD Polyethylene Tubing (6 metres)

1/2" (F)BSP threaded Sch. 40 PVC coupling for Venturi

(21) (2) 1/2" (F)BSP x (F)BSP PVC ball valve/ W8MC8

(24) 0 - 4lts Acrylic Flow Indicator

(22) Parker tubing connector: 1/2" Tube x 1/2" (M) BSP (P8MC4) for ESV inlet

(23) (3) Parker tubing connector: 1/2" OD tube x 1/2" (F)BSP (P8FC8) for discharge valve and flow indicator

(27) Arch Venturi (2) 1/2" PVC Nipples

(28) (2) 1 1/2" Slip x Slip Sch. 40 PVC Unions, Venturi fittings

## Will the Small Feeder Venturi Work at the Site?

Backwash or clean the filter and measure the effluent pressure of the pool system after the heater at "P1" in the Installation Schematic. If this pressure is 17psi or less and the minimum flow rate of the pool is greater than 170 lts /min, the small feeder venturi will provide adequate suction to operate the Easiflo® 1. The chart overleaf lists the suction flow generated by the small feeder venturi at various pressure differentials.

Install the venturi loop as shown in the appropriate Installation Schematic for either an above or below grade filtration system. The primary difference between the two is the use of ball valves on the below grade installation to allow the loop to be isolated from the pool system for service. Once the loop has been installed using the step by step instructions in the Installation Manual, adjust the pressure differential ball valve to achieve a vacuum reading of 13" Hg.

## Easiflo® 1 Venturi Installation: Theory

*(excluding Booster Pump)*

Flow to the venturi is taken from the pressure side of the pool recirculation pump after the filter and heater loop (if present). Flow from the venturi is returned downstream of the venturi inlet. A partially closed valve in between the venturi inlet and outlet provides the pressure drop needed to power the venturi. The three critical parameters in choosing a venturi are the inlet and outlet pressures and the suction lift. The Venturi must be capable of evacuating 4lt /min from the discharge tank when the filter is dirty. Suction flow will decrease with an increase in filter pressure as less water will flow through venturi.

Always minimize the backpressure when installing a venturi. This includes eliminating/minimizing any elbows on the outlet side of the venturi. In addition, if the venturi is located more than 0.9 metres above the feeder outlet, it will be necessary to calculate the effect of the suction lift loss on outlet flow. Follow instructions below to perform the Suction Lift calculation if required.

| Inlet Pressure (psi) | Outlet Pressure (psi) | Flow Through Venturi (lts /min) | Suction Flow **'F1'** (lts /min) |
|---|---|---|---|
| 5.5 | 5 | 87 | 3.78 |
| 6 | 5 | 106 | 6.00 |
| 6.5 | 6 | 91 | 3.78 |
| 7.5 | 6 | 106 | 1.5 |
| 7.5 | 7 | 98 | 3.78 |
| 8 | 7 | 106 | 4.92 |
| 12 | 10 | 121 | 3.78 |
| 12.5 | 10 | 128 | 4.92 |
| 15.5 | 12 | 140 | 3.78 |
| 17.5 | 15 | 144 | 3.78 |
| 18 | 15 | 148 | 4.92 |
| 21.5 | 17 | 155 | 3.78 |
| 22 | 17 | 159 | 4.92 |

After the evacuation system has been laid out, measure the height differential (in metres) between the venturi and discharge valve of the Easiflo®1 feeder. Use this height differential to calculate the suction lift factor in the formula that follows.

**Suction lift factor = (10.37 – height differential in metres) / 10.37**

Example: height differential is 2 metres, therefore

Suction lift factor = (10.37 - 2) / 10.37

= 8.37 / 10.37

= 0.81

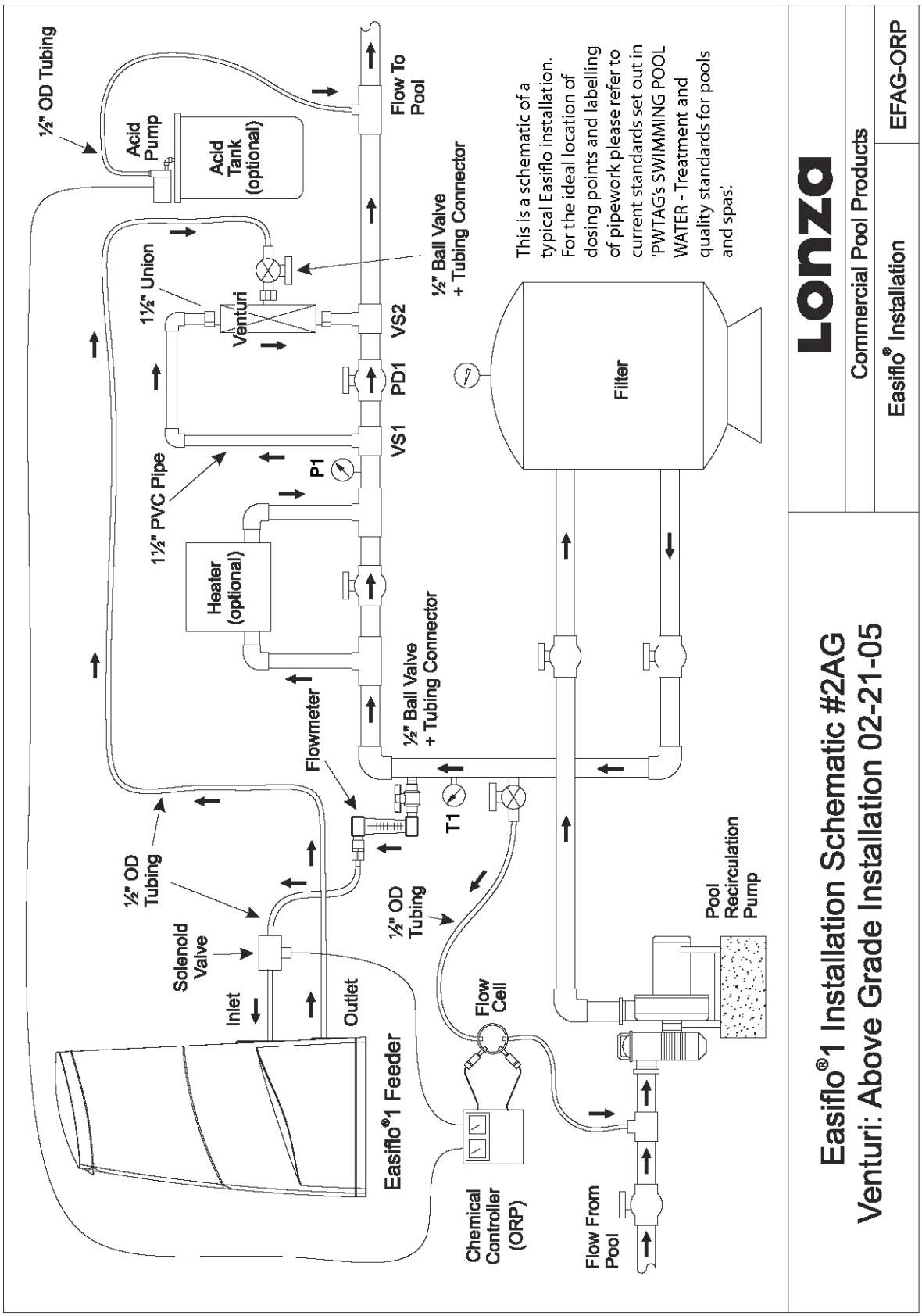
Take the suction flow (F1) and multiply it by the suction lift factor to get the actual outlet flow.

**The formula is: F1 x suction lift factor = actual outlet flow**

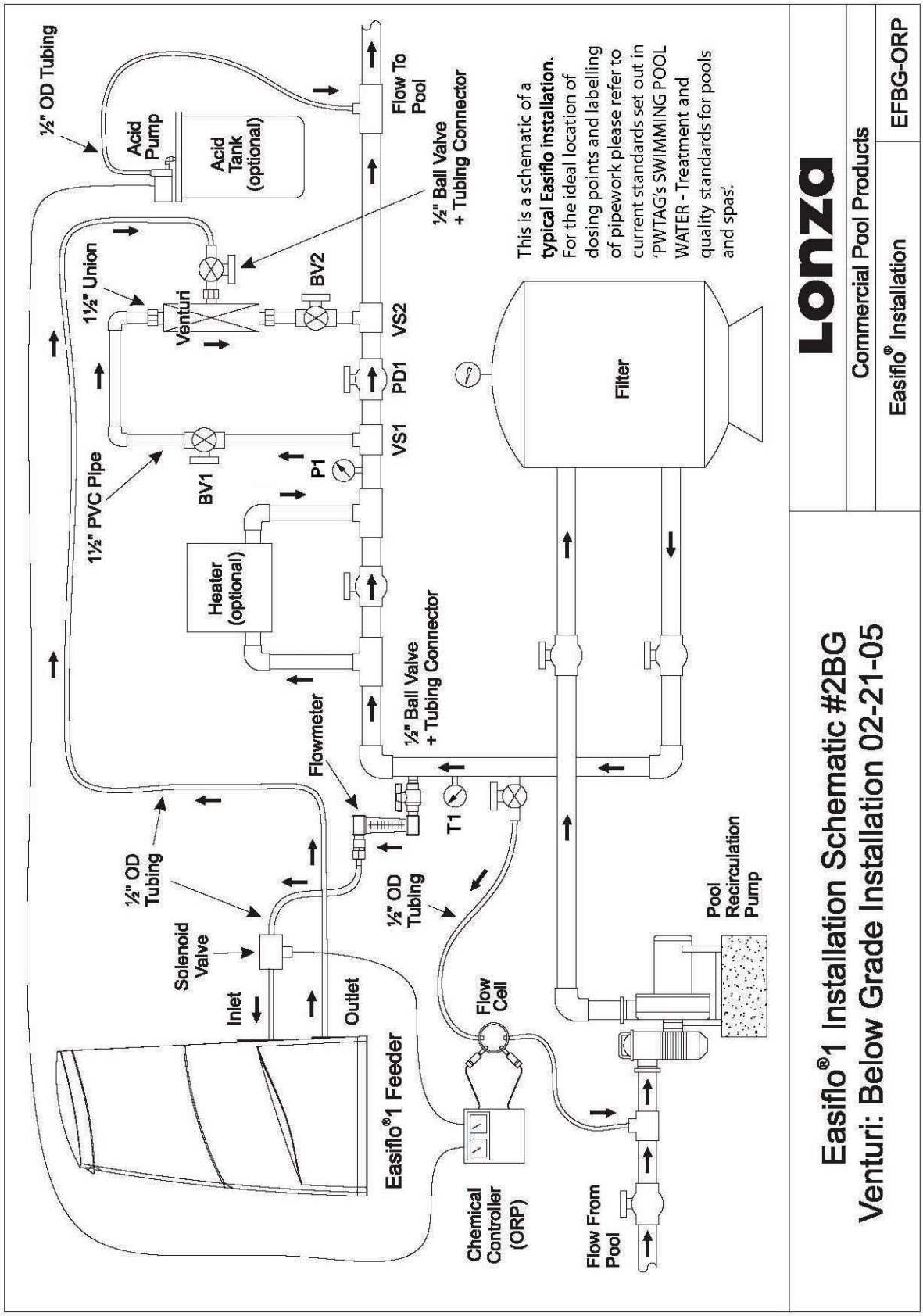
After installation, it is important to check the evacuation cycle of the Easiflo®1 Feeder to ensure that the drain time of the discharge tank is adequate.

The maximum recommended elapsed time to drain a **2 litre** bottle of water (positioned at the same height of the Easiflo®1 discharge valve) is **30 seconds**. This corresponds to an outlet flow-rate of approximately **4 litres per minute**.

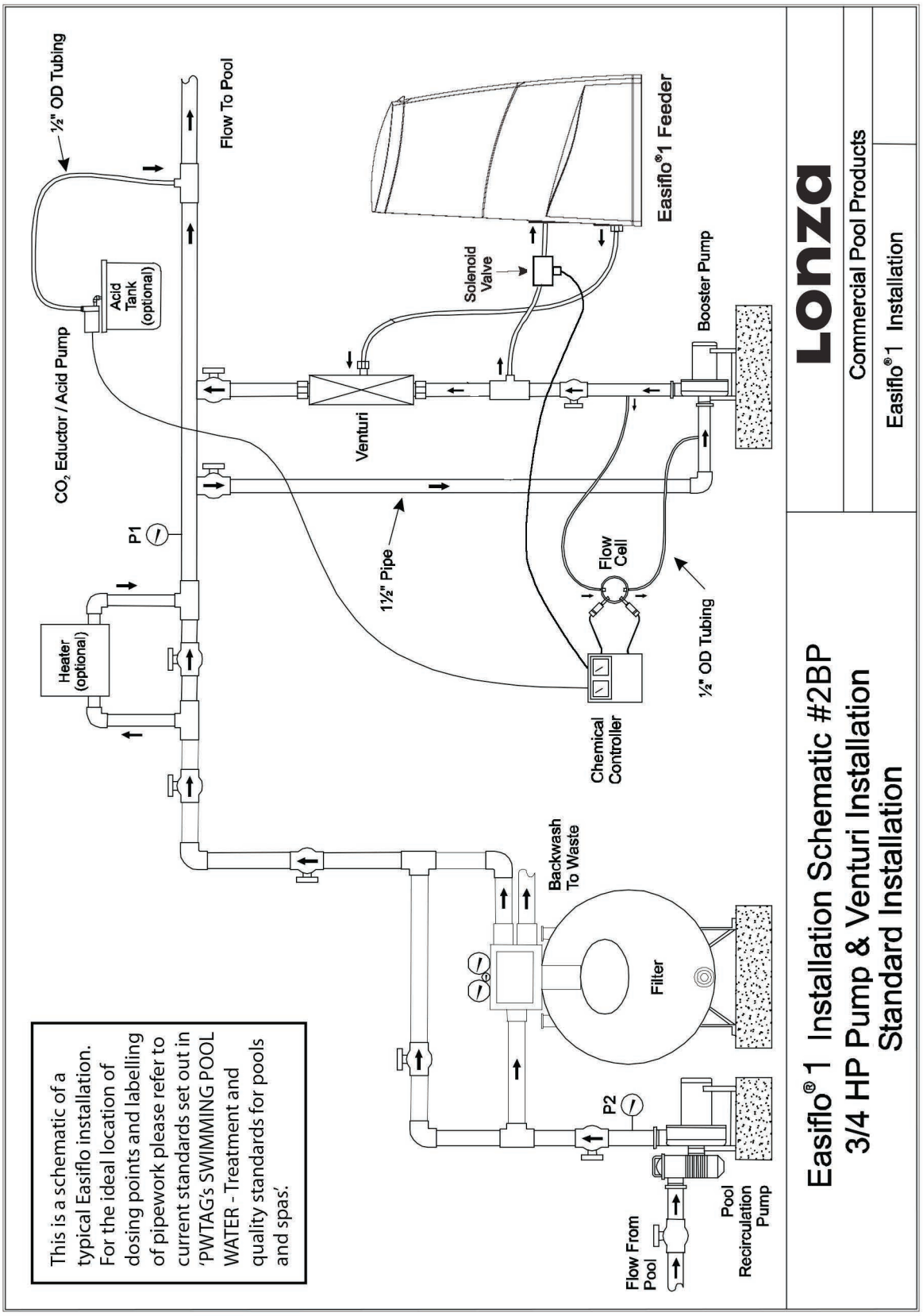
## Schematic 2AG - Above Grade



## Schematic 2BG - Below Grade



## Schematic 2BP - Booster Pump


½" OD Tubing
Flow To Pool
Easiflo®1 Feeder
Solenoid Valve
Acid Tank (optional)
Booster Pump
CO2 Eductor / Acid Pump
Venturi
P1
1½" Pipe
Flow Cell
Heater (optional)
½" OD Tubing
Chemical Controller
Backwash To Waste
Filter
P2
Flow From Pool
Pool Recirculation Pump
This is a schematic of a typical Easiflo installation. For the ideal location of dosing points and labelling of pipework please refer to current standards set out in 'PWTAG's SWIMMING POOL WATER - Treatment and quality standards for pools and spas'.
Easiflo® 1 Installation Schematic #2BP
3/4 HP Pump & Venturi Installation
Standard Installation
Lonza
Commercial Pool Products
Easiflo® 1 Installation

## Easiflo® 1 Venturi Installation

Refer to Schematic **2AG** for **above grade** pool system installation or Schematic **2BG** for a **below grade** pool system installation and follow the steps below.

**1** Drill a 1 3/4" hole (Fig 1) at location "VS1" found on the schematic drawing. Tap the 1 3/4" hole with a 1 1/2" BSP tap (Fig 2). Options for this step include the use of saddle clamps instead of drilling and tapping or splice in a tee with 1" pipe size (Fig 3) leading to Venturi System loop.

**2** Install a Ball or Gate valve at location "PD1" in Schematic (Fig 4).

**3** Drill a 1 3/4" hole (Fig 1) at "VS2" on Schematic. Tap the 1 3/4" hole with a 1 1/2" BSP tap (Fig 2). Options for this step include the use of saddle clamps instead of drilling and tapping or splice in a tee with 1 1/2" pipe size (Fig 3) leading to Venturi System loop.

Note: *Below grade systems will require the addition of ball valves at locations "BV1 & BV2" in schematic #2BG. This will allow the Venturi System to be isolated for servicing.*

**4** Take one Union for the Venturi system apart. Note that they have different halves. Glue these two halves of the union onto the Venturi (Fig 5).

**5** Take the other union apart and install on the union halves on the Venturi. (Fig 6).

**6** Apply PTFE tape to both ends of 1/2" ball valve and install Parker tubing connector (W8FC8) on one end of the 1/2" ball valve.

**Background**

The next steps involve creating a bypass loop on the pool return line for installation of a Venturi. This loop can be created by drilling and tapping or splicing into the return line with Tee's. We refer to using the drill and tap method.

You may find it preferable to splice in Tee's to make these connections. It will also be necessary to install a ball (or gate) valve in the return line at location "PD1" in the schematic drawing. This valve when partially closed, will force water to flow through the venturi creating the suction needed to evacuate the feeder.

Fig 1

Fig 2

Fig 3

Fig 4

Fig 5

Fig 6

**7** Install 1/2" ball valve onto venturi (Fig 7).

**8** Close the valve (Fig 8).

**9** Note the arrow on the venturi indicating the direction of flow (Fig 9). If there is no arrow marked on your Venturi, the direction of flow must go from the shorter end to the longer end.

Fig 7

Fig 8

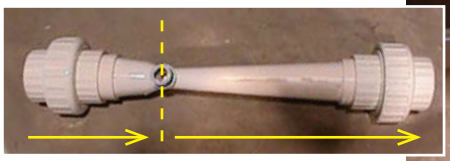
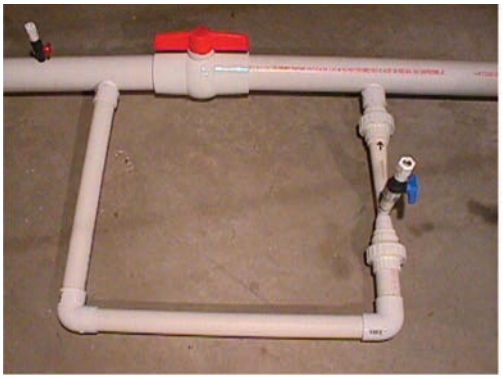


Fig 9

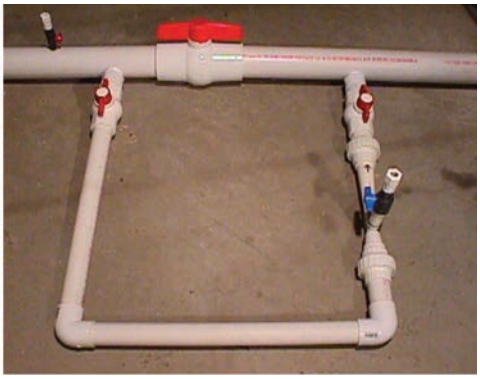
**10**
Complete installation of venturi bypass loop using 1 1/2" PVC pipe and fittings. There are four methods profiled in the following figures.

**Note: When performing step 10, make sure the venturi is installed with correct direction of flow.**

**Drill & Tap**

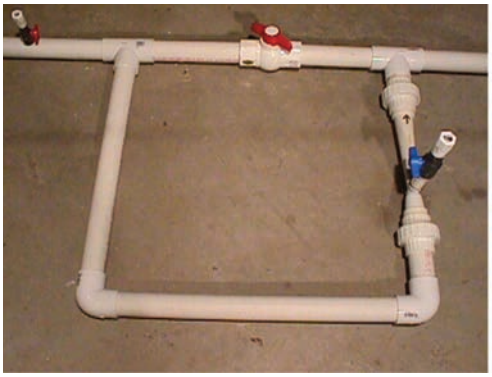


Above Grade

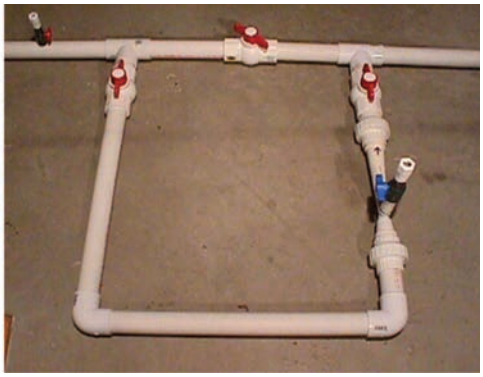


Below Grade

**Tees**



Above Grade



Below Grade

**Refer to glue manufacturers recommendations regarding drying times, before re-starting the pool pump.**

## Connecting the Easiflo® 1 to the Pool Recirculation System

**1** Place the Easiflo® 1 feeder in the pump room following the recommendations in the section 'Selecting a location for the Easiflo 1'.

**2** Drill & Tap $^1/_2$" BSP hole in effluent pipe @ "T1" in Installation Schematic.

**3** Install nipple and W8MC8 on $^1/_2$" ball valve and install ball valve in threaded hole.

**4** Loosen the nut on the tubing connector on the inlet to the Easiflo® 1 and push the $^1/_2$" OD polyethylene tubing into the connector and hand tighten.

**5 Flow Indicator Installation**
Mount the Flow Indicator (provided with the Easiflo® 1), where it is easily read.

Splice into inlet tubing and connect inlet flow to bottom port of flow indicator.

Connect tubing from feeder inlet to top outlet port of flow indicator.

**6** Run the tubing to the inlet ball valve installed in step 3 and cut to desired length. Loosen the nut on the tubing connector on the inlet ball valve and push the $^1/_2$" OD polyethylene tubing into the connector and hand tighten.

**7** Loosen the nut on the tubing connector on the discharge valve of the Easiflo® 1 and push the $^1/_2$" OD polyethylene tubing into the connector and hand tighten.

**8** Run the tubing to the outlet ball valve on venturi and cut to desired length. Loosen the nut on the tubing connector on the outlet ball valve and push the $^1/_2$" OD polyethylene tubing into the connector and hand tighten.

## Adjusting and Testing the Outlet Flow Rate

Install vacuum gauge with 1" MBSP x 1" FBSP fitting into coupling and install on the Venturi.

Close valve to feeder inlet.

Start pool system and open all valves on the venturi loop. Slowly close "PD1" until the vacuum gauge reads 13" Hg.

Put "**Do Not Adjust**" tag on "PD1".

Remove vacuum gauge and install outlet ball valve with fitting.

Close the outlet ball valve.

Connect $^1/_2$" tubing to fitting on outlet ball valve.

Re-open feeder water inlet valve.

### Check outlet flow with following procedure:

Fill a **2 litre bottle** with water.

Place near Easiflo®1 Discharge valve.

Disconnect the tubing from the discharge valve and place end of tubing at bottom of **2 litre bottle**.

Open outlet ball valve and record time it takes to empty the bottle.

It should take **30 seconds** or less to empty the bottle.This corresponds to an outlet flow rate of **4 lt / min** or greater.

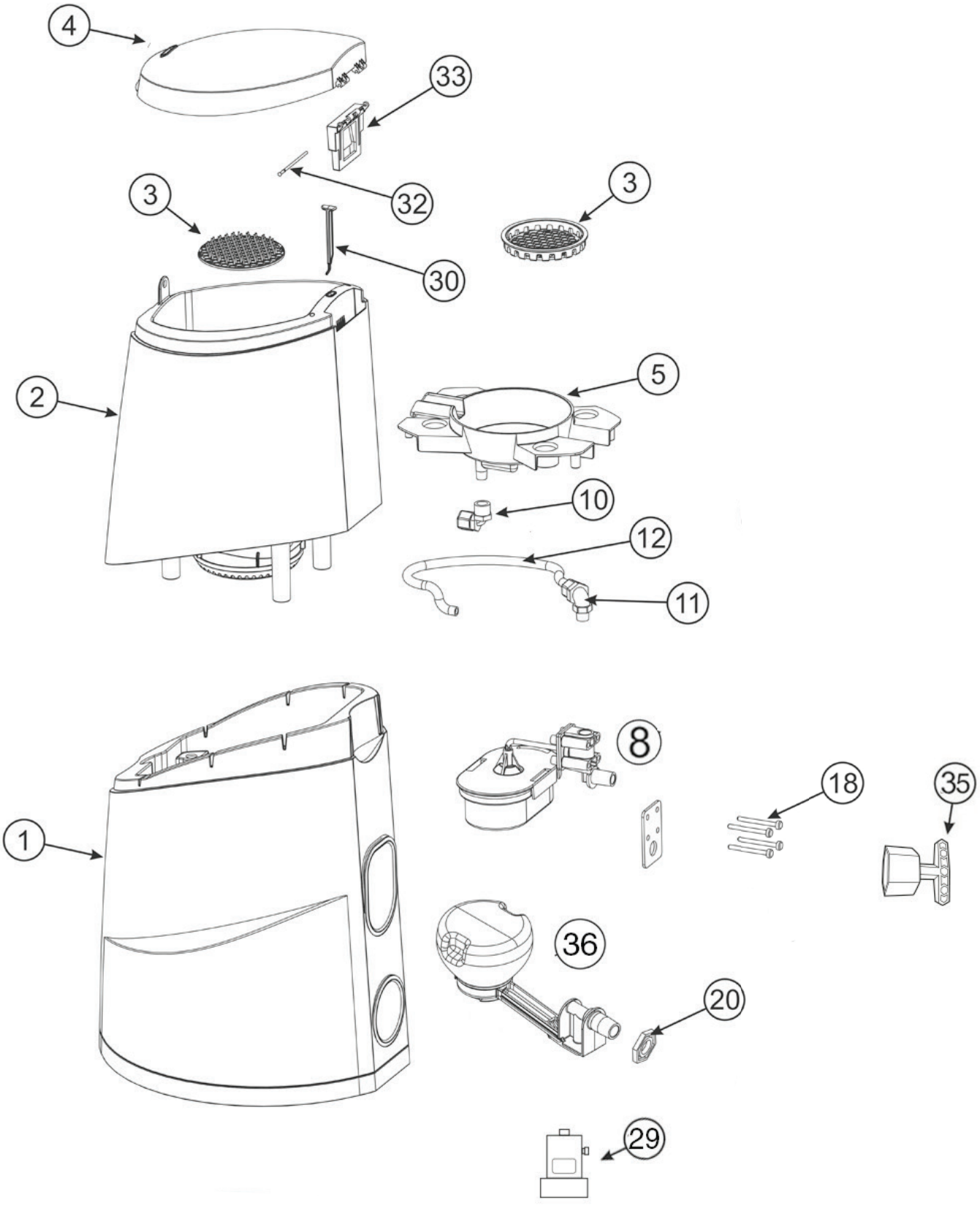
Close outlet ball valve and connect tubing to the discharge valve.

*The same result can be obtained by emptying 2 litres of water into the feeder base and meauring the time until the discharge valve closes.*

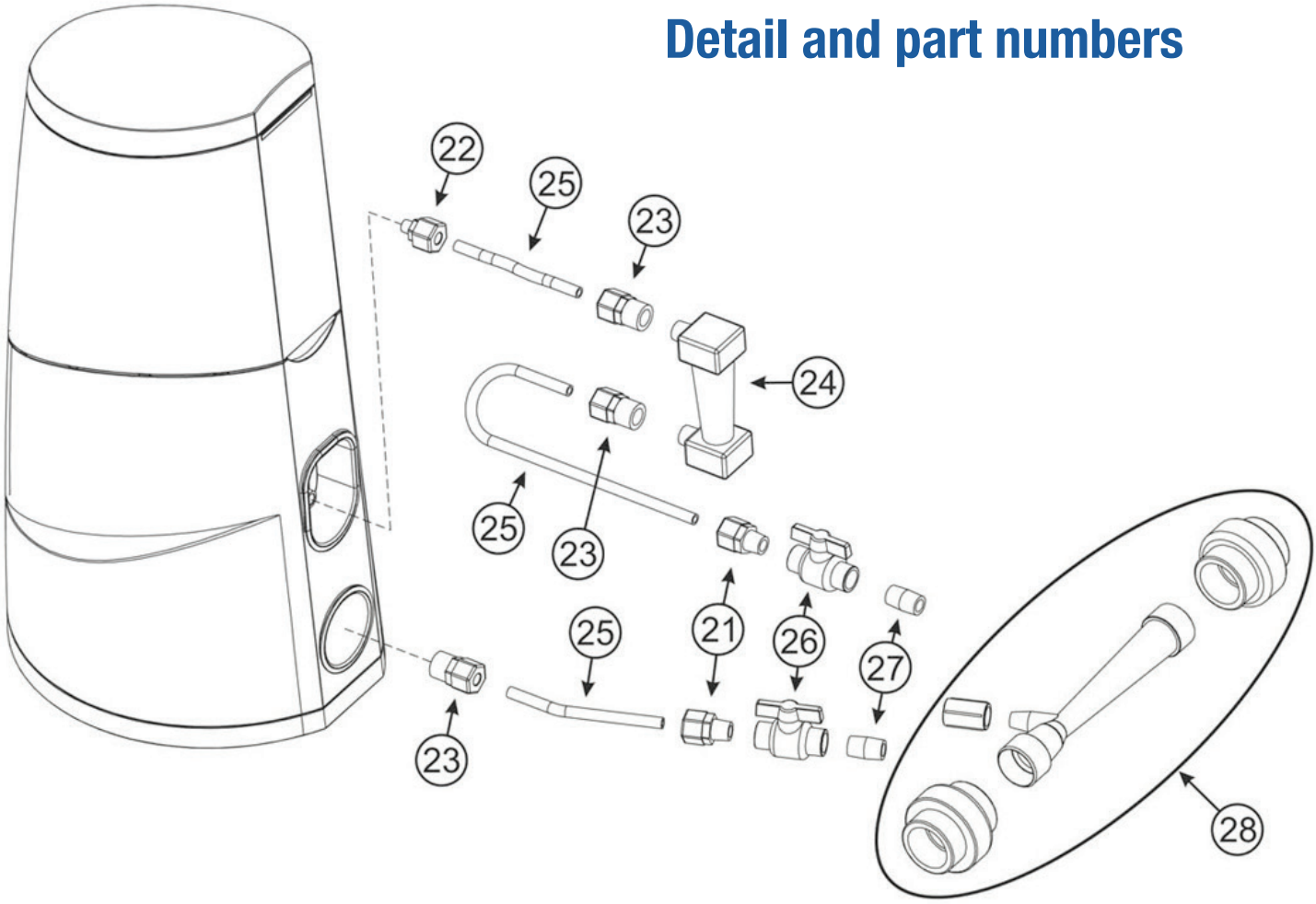
WARRANTY POLICY

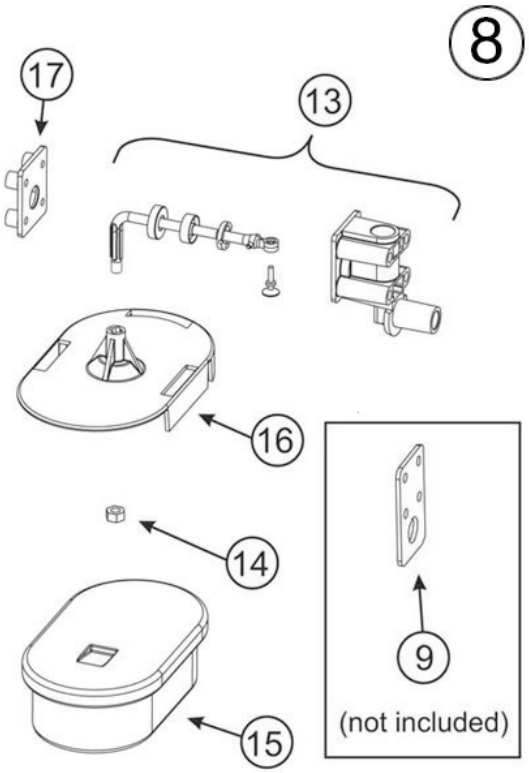
The Easiflo® Feeder comes with a 13 month warranty from the date of purchase from Lonza. For the warranty to be upheld, in the event of malfunction or damage other than normal wear and tear, all parts must be returned to us with notification of the feeder's unique serial reference number to: Lonza, Arch Chemicals Ltd, Wheldon Road, Castleford WF10 2JT.

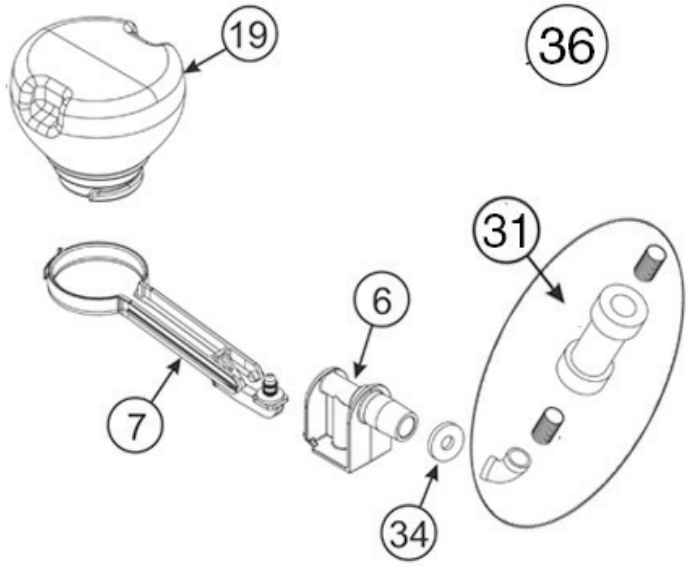
# Detail and part numbers



# Detail and part numbers



# Detail and part numbers

| No. | Part | Description |
|---|---|---|
| I | 74066 | EI Base |
| 2 | 77334 | EI Hopper |
| 3 | 77332 | EI Grid |
| 4 | 79879 | EI Lid |
| 5 | 77331 | EI Dissolving Cup with Nozzles Assembly |
| 6 | 79806 | Discharge Valve Body |
| 7 | 79217 | Discharge Valve Arm |
| 8 | 71496 | Emergency Shut Off Valve Assembly - part 71910 not included |
| 9 | 71910 | Rubber Gasket for Emergency Shut Off Valve |
| 10 | 74059 | Parker Fitting W6FE4 |
| I I | 71619 | Elbow (W6ME6) 3/8" For Feeders 30991 & P3, PI |
| 12 | 71618 | 3/8" PE Tubing (2 ft) |
| 13 | 71535 | Emergency Shut Off Valve with Arm Only |
| 14 | 71538 | Emergency Shut Off Float Plate PVC Nut/Discharge Arm Nut |
| 15 | 71540 | Emergency Shut Off Overflow Float |
| 16 | 71539 | Emergency Shut Off Float Plate |
| 17 | 71536 | Emergency Shut Off Mounting Plate |
| 18 | 71537 | Emergency Shut Off Mounting PVC Screws (1/4 x 20 x 2 1/4) |
| 19 | 79808 | Discharge Valve Float |
| 20 | 71583 | Discharge Valve Locknut |
| 21 | 71890 | Parker Fitting, W8MC8 |
| 22 | 71614 | Tube Connector (P8MC4) (also for solenoid) |
| 23 | 71588 | (5008) 112" x 112" Female Connector (P8FC8) |
| 24 | 74060 | Flow Indicator - EI |
| 25 | 71626 | 6 mts 112" 0.0. PE Tubing |
| 26 | 71621/27 | Inlet /Outlet (W8FC8) |
| 27 | 71611 | 1/2" x close PVC Nipple Parker Tubing Connector |
| 28 | 71974 | White Venturi |
| 29 | 77020 | Solenoid E1-E3 |
| 30 | - | Grid Hook |
| 31 | 79218 | Non-Return Valve |
| 32 | 77333 | Hinge Pin |
| 33 | 77336 | Hinge |
| 34 | 71576 | Dishcharge Valve Gasket |
| 35 | 352481 | Dishcharge Valve Lock Nut Spanner |
| 36 | 79804 | Discharge Valve Assembly |

**LONZA water treatment products**

# Emergency Response Procedure for Customers

1. In the event of a Health, Safety or Environmental Emergency involving Lonza water treatment products. This includes
    - Injury to persons requiring medical treatment
    - Loss of containment of product to the environment
    - Involvement of the Emergency Services (Police, Fire, Medical)
    - Involvement of the Environmental agencies
    - Major damage to property

## FIRST TELEPHONE +44 (0)1235 239670

This will connect you with the **NCEC (National Chemical Emergency Centre)** who support the Lonza Emergency Response. (It operates 24 hours a day, 365 days a year).

**THEN** Phone your local Lonza office (during office hours)

2. NCEC will provide initial assistance and advice (in English).
3. NCEC will also contact Lonza Head Office.
4. When calling the Emergency number, have the following information available (use your Emergency Response Procedure Checklist):
    - Your name
    - Your job title
    - Your company name and location
    - The Telephone (and fax) number that you can be contacted on
    - The Product Name
    - The Product Code
    - The nature of the emergency
    - The action you have taken
    - Are the emergency services involved?
    - Are the environmental agencies involved?

**PLEASE ALWAYS CONTACT NCEC IN THE EVENT OF A HEALTH, SAFETY OR ENVIRONMENTAL EMERGENCY INVOLVING LONZA WATER TREATMENT PRODUCTS BUT PLEASE ONLY USE THIS NUMBER FOR HEALTH, SAFETY AND ENVIRONMENTAL EMERGENCIES (as defined above).**